Work Completed

The first task for this week was to finish debugging the circuit. The sound chip problem was finally figured out. Since the chips were drawing too much current, a new setup would have to be determined. Instead of hardwiring the switch permanently, 5 volts would be supplied to the power pin on the chip and a high signal from the PIC would be supplied to the high pin of the switch (see Figure 1). The ping sound chip did not require this change because it did not draw too much current. The lion, dinosaur, and lion are now each connected to two of the solenoids. The ping will now sound whenever a new scent is chosen (cycle through indicator LEDs).

In terms of the solenoid circuit, it was found that the driver did not actually need a 22 uF capacitor connected to ground on the sixth pin (see Figure 2). Once this change was made and a working chip was used, the solenoid circuit worked as desired. Each of the PIC pins was tested with the solenoid setup, as well as the actual fragrance spray mechanism within the device.
It was also discovered that the voltage regulator became very hot while the circuit was on and running. To solve this problem, a second voltage regulator was added to divide the current. This voltage regulator will power the LED pattern circuit since it draws the most current out of all the subsystems (see Figure 3 & 4).

A problem was also encountered with the user switches. The problem was fixed by adding a pull-up resistor (see Figure 4). In addition, the 22 pF capacitors originally attached to the oscillator were incorrect and removed.
Figure 4: Main Circuit

Once all these changes were made, the circuit actually worked as intended (see Figure 5). Because the circuit now worked, the second task of the week could be completed: the PCB layout. All of the above changes were updated on the PCBExpress schematics and alterations were made accordingly to the PCB layout. After some considerable rewiring, editing, and general cleaning up, the PCB was ordered. Along with the PCB, all the necessary electrical components including resistors, capacitors, dip socket, and battery were also ordered.
The third task of this week was to begin final assembly and installation of the various components into the device casing. The speakers, on/off switch, and user switches were installed. In addition, work began on wiring the indicator and pattern LEDs. Finally, blue spray paint made for PVC was purchased and coating of the base was begun.

**Future Work**

Since only one week remains, everything must be completed in the next week. The tasks involved in completion include: painting the device, wire/installation of the LEDs, wiring of the speakers, final assembly of the device, attachment of the protective casing, and wiring/installation of a completed PCB and battery.

**Project Review**

The successful completion of this project within the next week hinges on the PCB. Its estimated arrival is either Wednesday or Thursday. As long as this can be assembled in a timely manner and no serious problems are found, the project can be finished by Friday. The remaining items are rather straightforward and hopefully can be completed by Wednesday. This way the team’s full attention can go to the PCB upon its arrival.

**Hours Worked**

Total = 30 hours